

1 14. The method of claim 13 wherein the pre-associated state to
2 a pending insert state transition is accomplished by:

- 3 (a) marking the element to be inserted as being pre-
4 associated to the data structure;
5 (b) navigating the data structure to an insertion point;
6 (c) creating links between the element to be inserted and
7 the data structure at the insertion point, the links
8 created being visible only to the insertion operation;
9 and
10 (d) marking the element as being pending insert.

1 15. The method of claim 14 wherein the pending insert state to
2 a valid state transition is accomplished by:

- 3 (a) creating instructions for making the created links
4 visible to all operations; and
5 (b) creating instructions for making existing links at the
6 insertion point invisible to all operations.

1 16. The method of claim 15 wherein the step of performing the
2 second set of operation tasks further comprises executing the
3 created instructions including marking the element as valid.

1 17. A method of deleting an element into a linked data
2 structure comprising the steps of:
3 (a) performing a first set of operation tasks in a first
4 phase, the first set of operation tasks operable to
5 effect a first set of element state transitions
6 including a valid state to a pending delete state
7 transition;
8 (b) developing a second set of operation tasks, the second
9 set of operation tasks operable to effect a second set
10 of element state transitions including a pending
11 delete state to an invalid state transition;
12 (c) performing the second set of operation tasks in a
13 second phase.

1 18. The method of claim 17 wherein the valid state to a pending
2 delete state transition is accomplished by:
3 (a) navigating the data structure to a deletion point;
4 (b) creating links at the deletion point visible only to
5 the deletion operation; and
6 (c) marking the element to be deleted as pending delete.

1 19. The method of claim 18 wherein the pending delete state to
2 an invalid state transition is accomplished by:

- 3 (a) creating instructions for making the created links
4 visible to all operations; and
5 (b) making existing links at the deletion point invisible
6 to all operations.

1 20. The method of claim 19 wherein the step of performing the
2 second set of operation tasks further comprises executing the
3 instructions including marking the element to be deleted as
4 invalid.